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ABSTRACT

This paper advocates the use of cognitive maps by researchers in comparative education. Cognitive maps are defined as "visual imageries depicting on the two dimensional surface of a screen or paper the researcher's perceived application, allocation, or appropriation of social space by social groups at a given time and in a given place." The use of cognitive maps is advocated as a means of expanding social dialogue because it offers the map's reader a forum for responding directly to the map maker by producing on the map differences in claims to social space perceived by the reader. Numerous theorists of the postmodern enterprise in geography/cartography are discussed, as is the work of three academic practitioners, one in comparative education and two in geographic cartography, who have observed that colleagues in these areas must now move their respective academic fields toward a postmodernist integration of ideas and theories. The use of cognitive maps, and not necessarily postmodernism itself, is promoted as a means for comparative fields to expand their knowledge base. Three figures illustrating various aspects of cognitive mapping are included and 46 footnotes are appended. (DB)

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Mapping the Postmodern Turn in Comparative Education

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Abstract

In this essay we demonstrate how the creation of cognitive maps by academics, as well as those individuals and social groups who want their "mininarratives" included in the social discourse, will not only nurture the movement away from modernist and positivist failings, but open a dialogue among diverse social players. Social science discourse has frequently noted that academic analysis in the modernist and positivist tradition of metanarratives thrived on the assertions and confirmations of the role of social class and the roles of social classes. We suggest the cognitive map will provide an effective method for visually demonstrating the sensitivity of postmodern influences for opening social dialogue to those who were disenfranchised by the modernist/positivist conventions.

Mapping the Postmodern Turn in Comparative Education

> For those who are completely satisfied with the traditional aims and methods of geography the use of models may appear to be unnecessary.[1]

> The notion of text....includes other cultural productions such as paintings, maps and landscapes....These should all be seen as signifying practices that are read, not passively, but, as it were, rewritten as they are read. This expanded notion of texts originates from a broadly postmodern view, one that sees them...as cultural practices of signification rather than as referential duplications.[2]

How might comparative researchers enhance the presentation of their findings, particularly when their findings focus on the diffusion of heterogeneous orientations? We are concerned with developing in our comparative discourse

a visual dialogue as a way of communicating how we see the social changes developing in the world around us. We are advocating the use of cognitive maps--visual imageries depicting on the two dimensional surface of screen or paper the researcher's perceived application, allocation, or appropriation of social space by social groups at a given time and in a given place. While we acknowledge cognitive maps constitute a form of discourse, there are several reasons we choose to perceive them as a dialogue. We neither believe nor intend to convey that cognitive maps can replace spoken or written discourse; the research article will remain the primary method for reporting research findings. However, we view the cognitive map as a model for developing dialogue because it offers the map reader a form for responding directly to the map maker by producing on the map differences in claims to social space perceived by the reader.

We suggest that while the academic may originate maps, the reader who is a member of a particular claimant group will view the map as an opportunity to strengthen his claim by citing or rebutting original mapping efforts as well as the knowledge and information the map offers. Paulston has noted "We are in for an extended period of learning to work together as a diverse yet interactive global community of scholars. This situation suggests a continuing need for goodwill, translation, and cognitive maps to help us see a shifting theoretical landscape."[3] There is no doubt, however, efforts

to work together will extend beyond academia, embracing those groups whose activity and social space are being mapped. If we are to develop rules for accuracy and inclusion in a critical, postmodern, social cartography, those rules must envelop not only the space being mapped, but the perceptions of the owners of that space.

This process permits the map reader to assist in the map making process or to become a map maker. These important concepts of dialogue and inclusion will be further developed later. Our objective in this discussion is to sail beyond the many methodologies for identifying knowledge, to navigate into the open waters in order for us to begin to fish for alternative ways of presenting the products spawned by the new identification methods available not only to comparative education but to other academic waters.

These seafaring metaphors recall another set of metaphors, those of Harold J. Noah[4] who illustrated there are two sets of study objects in comparative education, those the field has used long enough to feel secure with and those the field has not yet attempted to use or has not found. Using the metaphors of Fast-Fish and Loose-Fish, taken from Herman Melville's description of the whaler's law-of-the-sea governing a ship's claim to a whale, Noah suggested comparative researchers should make fast to more methods and subjects for comparative study. Fast in this sense means becoming connected, occupying, or claiming. Something that is

loose does not meet these criteria for possession; it is available for anyone to claim.

It was Peter Hackett who concluded "that without metaphor, allegory and a thick description of the world around us there is no basis for comparative study or analysis."[5] We concur in this observation, noting that metaphors of fast and loose in the sense Noah suggests counsels anyone in comparative studies to the possibilities that exclusions, both intentional and unintentional, must be the objects of the chase. In what we as researchers seek, as well as what we report, should be found the "basic source of unity in our experience."[6]

Certainly much has changed in the nearly two decades since Noah introduced Melville's metaphor to comparative education. For education, as well as many other academic fields, change has often raised more questions than it has answered, raised more fears than it has calmed, raised more arguments than it has settled. At the core of the questions, fears, and arguments are the various academic fields reorganizing and reestablishing themselves to sail out of the modernist/positivist coves and shoals to explore the spaces of new seas.[7] Sailing neither quietly nor unnoticed, these modern voyages of discovery have the attention of many who express their ideas about how the voyages should proceed. What rationales for new discourse methods have comparative

researchers recently introduced? How does the cognitive map fulfill the needs addressed by these rationales?

Invitations to a Postmodern Reflection

We will examine three academic practitioners, one in comparative education and two in geographic cartography, who have observed that colleagues in these areas must now move their respective academic fields toward a postmodernist integration. The aim of these practitioners in both fields is to become more explicative, comparative, and open to heterogeneous orientations in their postmodern academic discourse. It is not postmodernism we promote, but the possibilities for comparative fields to expand their knowledge bases through appropriate, thoughtful, and skillful development and application of cognitive maps.

In presenting an argument that postmodernism "should be a central concept in our comparative education discourse,"[8] Val Rust calls for the application of postmodernist theories to strengthen emerging representations of reality. Rust notes that Foucault believes there must be a move beyond determinism and universals while Lyotard discerns in the postmodern a distrust of metanarratives. Noted also is Richard Rorty's observation that metanarratives are "the theoretical crust of convention that we all carry and tend to universalize."[9] Postmodernism deals with changing these universal metanarratives of social valuation of the

modernist/positivist era, metanarratives seen as totalizing, standardizing, and predominating.

Rust finds postmodern discussions and criticisms address the history of modernist society and culture as it was ingrained and justified by a world view obsessed with focusing on time and history. Time and history in the modernist/positivist world were not separate cognitive structures; they were linked in a way that held time and history each at least parallel to the other, if not the same entity. Rust finds postmodernism's liberating influences transcend not only combined time and history, but combined space and geography as well.[10] It is space and not time that becomes important in postmodern mapping discourse. It is space we find exhilarating because space, not time, is the arena for dialogue.

Rust concludes comparative educators must relocate into this space, extracting from it the metanarratives of modernity that must be dismantled to locate and identify the multiple small narratives hidden in the once invisible space of society. The small narratives that Rust would have us draw our attention to must be the focus of mapping efforts in contemporary social science.

Suggesting as does Rust that our search for "the silent blueprint to life means looking in areas of darkness,"[11] Star focuses our attention on these small and previously hidden narratives. The comparative study of social narratives is

developed similarly to that of the cartographer of land masses. We await the erosions and eruptions of the social masses for the opportunity to map the changes, to analyze and interpret events. We take the event and make it consumable, a commodity for our readers, by filtering, fragmenting, and re-elaborating it "by a whole series of industrial procedures...into a finished product, into the material of finished and combined signs."[12] Then, between the erosions and eruptions we do not wait for more tumult, but refine and reinterpret what is already fast to us as well as what we can make fast to our studies.

Mapping social space is an effective method for addressing Rust's thoughtful arguments calling for a postmodernist application to strengthen emerging representations of reality. There is, however, much we must learn and understand to become effective mappers. This requires an association with a field experienced in representing real space on a map. For this reason we introduce to our invitation to a postmodern reflection two cartographers who have observed in their field the same concerns and needs addressed by Rust.

The leading advocate of the postmodern enterprise in geography/cartography is J. B. Harley who advocates that cartographers both in academia and in the field must consider postmodernity's potential for revitalizing their cartographic efforts. Harley states that the premise of cartography has

long been "mappers [must only] engage in a scientific or objective form of knowledge creation."[13] In 1981 Robert McNee observed that the cartographic process continued in the positivist traditions. He attributed this to the mapper's attraction to the label and role of being an objective scientist.[14] From the time of McNee's observation in 1981, to Harley's much discussed call for a postmodern cartography nearly a decade later, we see the field continued to suffer through a long period of positivist grounding. However, McNee and Harley differ on the reasons for this.

McNee argues that during the long history of cartography, this tenacious holding to the positivist ideal of the objective scientist resulted in the continued construction of textual metanarratives, both in the maps and in the semiotic representations used by the mapper. Harley argues that after the last three decades, when much of academia moved toward or into the postmodern enterprise, cartographers lagged in a modernist/positivist application of knowledge, not because of a concern for their reputations as objective scientists, but because of the influence ancient power structures had on the creation of maps. Harley states the power structures must give way to new ideas that should now be applied in a critical cartography, a cartography permitting the interpretation of the map as well as opening the map to the intent of those who use the map as well as those who create the map.

Harley makes an important distinction between the external power and the internal powers regulating the creation and reading of ancient maps. External power controlled what went into the map. It emanated from patrons, monarchs, and state institutions. Harley identifies the internal power "embedded in the map text."[15] This power is determined by the inclusions and exclusions of information written into the map at the will of the external power. Internal power limits all readers of the map to only the knowledge permitted on the map. The reader has no awareness of the excluded knowledge that could be included from the real-world "spatial panopticon."[16] These maps are akin to the modernist objects that Baudrillard suggests "can be historically and structurally defined as the exaltation of signs based on the denial of the reality of things."[20]

Figure 1 shows the top-down-power-influences controlling what little knowledge the reader can gather from a map. The top-down-power-influences are the external power imposed on the cartographer and the internal power restricting the reader's access to knowledge. We believe that in postmodernity the restrictions imposed in the map by the external powers make this type of map an object Baudrillard describes as "rare, quaint, folkloric, exotic or antique... bogus to the extent that it presents itself as authentic in a system whose rationale is not at all authenticity, but the calculated relations and abstractions of the sign."[21]

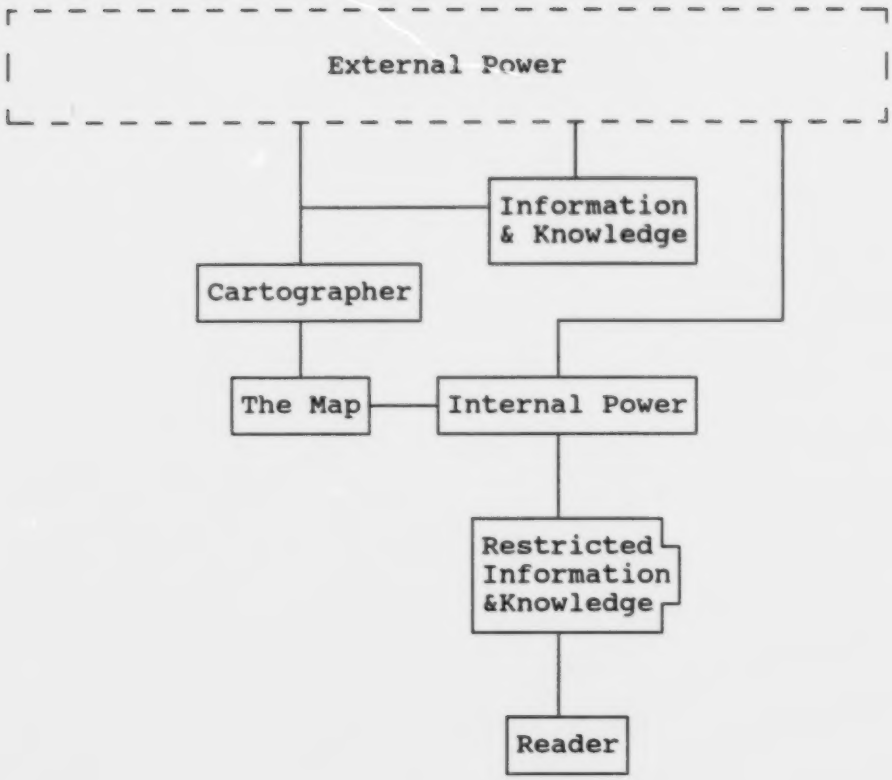

Figure 1 A modernist cognitive map illustrating Harley's description of constraints on the reader's access to mapped knowledge. This figure shows the flow of power as it influenced the restriction and control of information and knowledge on the modernist map.

Note that in Figure 1 there are no "markedly different proposals also seeking to improve the rigor and relevance of research in education [or cartography] by encouraging tolerance, reflection, and the utility of multiple approaches in knowledge production and use."[22] Foucault offered a similar criticism of the modernist/positivist social science, finding it to be a contemplation of space and time that treated space as "the dead, the fixed, the undialetical, the immobile" while time was "richness, fecundity, life, dialectic."[23] This perspective of positivist space Foucault describes is also represented in the style of cognitive map presented in Figure 1, where space is restricted because it is controlled, it is deliberately made dead, fixed, undialetical, and immobile.

In Figure 1 spatial restrictions limit the categories of positivist reality. The space given all categories of the map are controlled by the External Power. This control results in the other categories occupying only that space necessary to accommodate them, as determined by the External Power. The Internal Power of the map occupies only the space necessary to control the distribution of Knowledge and its reception by the Reader. No component is larger than is wanted, nor is any component capable of self-expansion. The reader's knowledge is limited by others rather than unlimited by the reader's desire to know.

Concerned as are Rust and Harley with overcoming the problems of modernism's positivist treatment of space is cartographer Edward Soja. Soja contends that in the past "space more than time, geography more than history, [hid] consequences from us."[24] Arguing as we do for the use of space, Soja advocates making space and geography the primary focus and framework for the study of social phenomenon; the questions asked and the answers reported should first be concerned with situating the whereness of events.

Soja recounts that during the century of modernism/positivism the spatial was illusive, "blurring our capacity to envision the social dynamics of spatialization."[25] The blurring now must be made clear, particularly where multiple mininarratives are revealed to occupy space both geographical and ideological when only a metanarrative served before. Advocating space as the primary starting point for research diminishes the importance of time and creates the opportunity for researchers to apply to their craft the critical cartography advocated by Soja.

Space in the postmodern is the domain for the study of multiple social ideologies and convictions. It is the application, allocation, or appropriation of these spaces within the social milieu that concern both the postmodern comparative researcher and the cartographer. The possibilities for mapping the spatial in the social milieu motivate our creating critical cognitive maps.

Recall how Figure 1 shows the relationship of External Power to the creating and reading of knowledge from the map text, and consider whether this diagram represents a construction appropriate to Val Rust's argument for "the critical task of disassembling these narratives [while increasing] our attention to small narratives."[26] Of course, Figure 1 is not an appropriate model for Rust's argument. Rather, this figure authenticates Charles Hampden-Turner's comment that the "visual-spatial imagery of the human is a style of representation largely missing from the dominant schools of psychology and philosophy, [so] there can be no pretence of impartially cataloguing the status quo. The image-breakers are still in charge."[27] Our purpose is to break the image-breakers, to encourage comparative analysts to become image-makers and, in doing so, to include the visual-spatial imagery of the human in their discourse.

Rust's and Harley's challenges to their fields of comparative education and cartography encourage these potentials for affective change; they encourage a global vision reflecting the spatial as advocated by Soja. We suggest that the prospect of a critical cartography offers possibilities for a comparative education examining educational problems "in the light of culturally determined needs, objectives, and conditions."[28] What is this cognitive mapping we advocate? What is the benefit of cognitive mapping

and critical cartography to the literature of comparative education?

Rationales for and Examples of Mapping

Cognitive mapping is "a process composed of a series of psychological transformations by which an individual acquires, codes, stores, recalls, and decodes information about the relative locations and attributes of phenomena in...[the] everyday geographical environment."[29] This process consists of "aggregate information...acquisition, amalgamation, and storage" producing a product depicting space peculiar to a point in time. Cognitive maps present immediate and practical answers to the location of persons and objects as well as relationships between combinations of persons and objects. The interpretation and comprehension of social events can be facilitated and enhanced by cognitive images.

A cognitive map is a unique object. Each map is initially the property of the individual creating it. This map contains some part of that person's knowledge and understanding of the social system. As a mental construction of the physical world, as well as the worlds of ideologies and convictions, cognitive maps can be regarded as elements or components characterizing what Baudrillard's translators describe as "art and life."[30] Foss and Pefanis note Baudrillard finds art and life shape the system of objects, and believes a purely descriptive system "carve[s] out a truth."[31] While we find cognitive maps can shape the system

of objects, we suggest that rather than carve out a truth they instead portray the conceivable and possibly, as well, the rational.

We suggest that what Baudrillard calls "the artistic enterprise" includes the cognitive map in the sense that the map is a descriptive system; mapping collects knowledge objects around a "point where forms connect themselves according to an internal rule of play."[32] For this reason, when we speak of maps we are not including axial graphics, bar graphs, or raw data charts. We insist that maps must first reveal information about space by showing that information scaled within another space.

Mapping the elements of comparison models will contribute to our comprehension of the social and provide a basis for new research and for new maps resulting from the knowledge generated by the research. Including cognitive maps in comparative analysis is one of "the many routes leading to affirmative answers [in] the complementarity of qualitative and quantitative approaches [that] work to make more secure our catch in comparative and international education."[33]

Maps can help overcome what Nozick describes as the nature of the philosophical argument of inclusion and exclusion: "All those things are laying out there and they must fit in. You push and shove the material into the rigid area, getting it into the boundary on one side and it bulges out on another. You run around and press in the protruding

bulge, producing yet another in another place. So you push and shove and clip off corners from the thing so they'll fit and you press in until finally almost every thing sits unstably more or less in there; what doesn't, gets heaved far away so that it won't be noticed."[34] Maps overcome these problems because they have the potential for representing the total area of large space on a smaller space, so that nothing has to be omitted or "heaved away."

An example of this type of cognitive map is Paulston's macro mapping of paradigms and theories[35] shown in Figure 2 below. This map embodies Soja's concern for "a social ontology in which space matters from the very beginning."[36] It is a study of society establishing "a primal material framework [of] the real substratum of social life."[37] The map's purpose is to illustrate domains, it represents a field of ideas. It opens space to all propositions in the social milieu. What appears as open space within the global representation is space that can be claimed by social estates not yet represented by the labels now included on the map. It is both conceivable and possibly rational that the part of the world Paulston draws our attention to does look like this, but it is Paulston's perception of the world derived from textual exegesis and not what Baudrillard would consider, we are sure, a map carving out the truth. If not truth, but only one possible rational way of seeing the world, how should or can

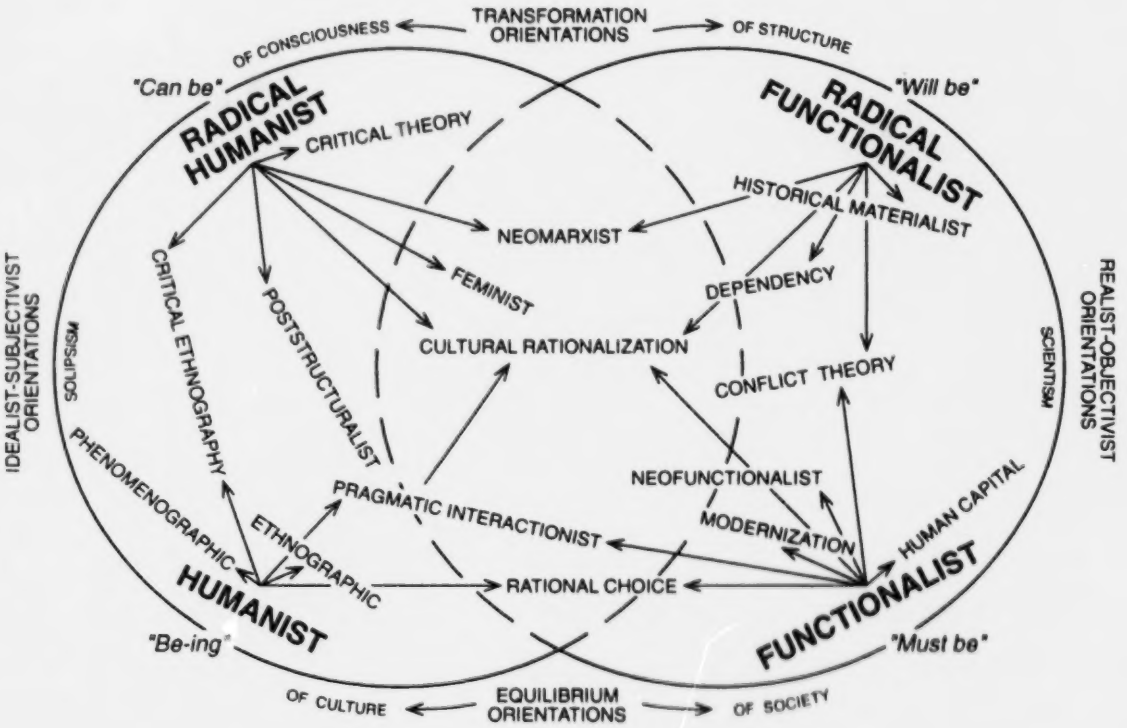

FIGURE 2: A MACRO MAPPING OF PARADIGMS AND THEORIES IN COMPARATIVE AND INTERNATIONAL EDUCATION SEEN AS AN INTELLECTUAL FIELD

Source: Paulston, Oct. 1992

it be considered as a irrelevant contribution by those who are not Paulston?

We maintain that creating on the spatial surface of paper an image Soja called "a primal material framework [of] the real substratum of social life"[38] addresses Rust's concern for "the critical task of disassembling... [meta]narratives [focusing] our attention to small narratives."[39] Paulston's situating of paradigms and theories on the spatial surface of paper grants to those paradigms and theories recognition of their space in the real world. We can question whether the depiction is accurate, whether the allocation of space is appropriate, and whether the relationships have developed or are developing in the directions Paulston indicates. If we have answers to these questions the map is available for dialogue: we need only redefine the space. Paulston's map is a "holistic, context dependent, and integrative" treating of paradigms of knowledge not as "isolated facts, but as integrated wholes."[40] Thus knowledge is no longer positivist data but "integrated forms of culture."[41] Spatial mapping of paradigms and theories also moves comparative education away from a direction Brain Holmes cautions is only "a system for classifying societal data,"[42] the system of the modernist era that structured knowledge as illustrated in Figure 1.

Paulston's map in Figure 2 does not conform to the developmental model for modernist/positivist maps shown in Figure 1. There are no powers in Figure 2 controlling the

disbursement of knowledge. Instead, the map develops as proposed in Figures 3 and 3a below, where the power to see the world is so equally shared that power is not even a category on the developmental map. Figure 3 represents a small field of the global representation in Figure 3a. Figure 3 shows a linear progression of spatial cycles through time but not controlled by time. Each cycle begins with the Social Milieu, followed by a Reader/Mapper creating a Map. The Reader is a person who observes the social milieu. The Mapper is a person who creates a map reporting his or another person's observations. The Map provides new Knowledge/Information that then becomes incorporated in the Social Milieu. That Knowledge/Information most likely changes the Social Milieu, creating new social spaces that Readers observe and Mappers again address.

The use of space in this map is much different from the space represented in Figure 1, where space was controlled and limited by the external power and knowledge was controlled and limited by the internal power of the map. In Figure 3 the only limitations are those of the Map surfaces, the square or rectangular, vertical or horizontal screens or paper surfaces used by the Mapper to outline social space in miniature. The absence of lines connecting the linear progression permits an infinite number of mappers and maps--unlimited perspectives of the Social Milieu, all contributing to the Knowledge/ Information of how space is used.

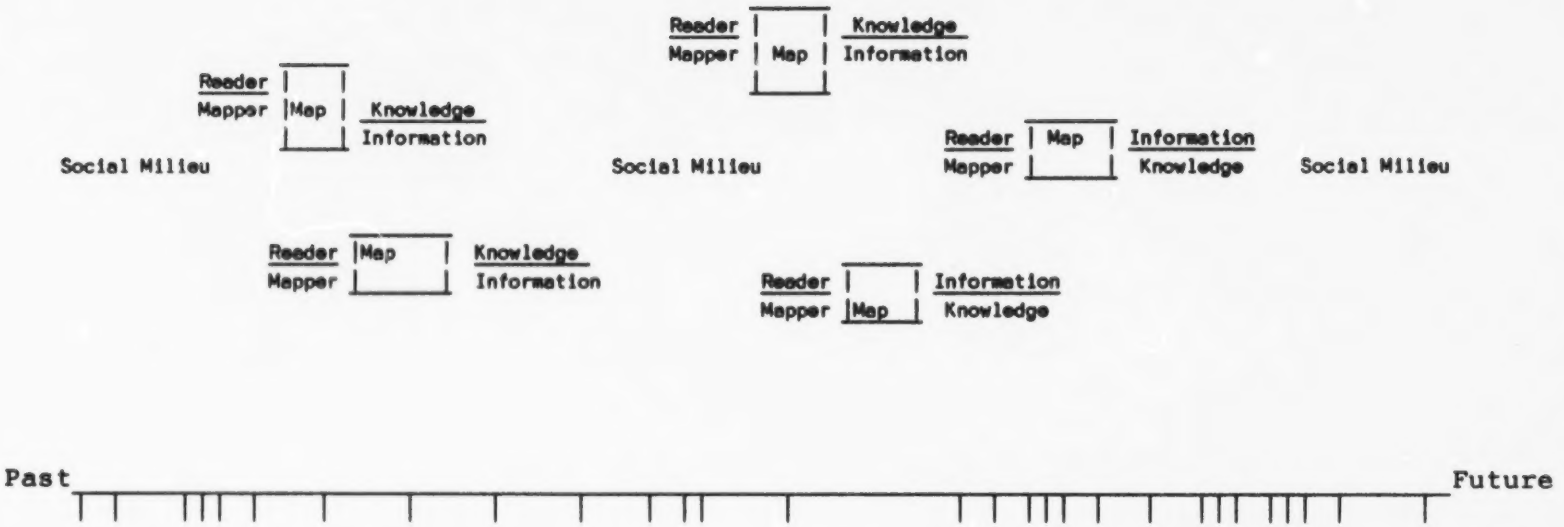

Figure 3. A cognitive map illustrating the free access to knowledge and the absence of a power base in the Postmodern map. This map is purposely liner to show the ongoing cycle of mapping the postmodern social milieu. Each map creates new knowledge that changes people's understanding of their society. This understanding effectively changes the social environment they live in. New environments require new understanding of the social milieu for which new maps should be developed. This linear map is shown in a global context in Figure 3a. An expanded legend for this map is in the text.

The continuous horizontal line with descending vertical lines across the bottom of Figure 3 and Figure 3a is a time line. We see this time line as a definite break from the modernist/positivist representations of time that previously divided space into equal units. Each interval between each set of vertical lines represents a unit of time, so the narrowest space and the widest space each represent one unit, whether minutes, hours, days, months, years, etc. The erratic spacing, however, makes this time line distinctly the product of a postmodern mapping effort. We suggest that wider spaces indicate greater activity or change in the social milieu, or, to draw on a previously used metaphor, more social erosions and eruptions, what Foucault calls the ruptures that change social space. The more narrow spaces, the closer sets of vertical lines, indicate little social change in the given period.

Figure 3 is incomplete since we could indicate mapping occurring in the spaces above and below the Knowledge/Information as well as the Social Milieu entries. The Mapper is not bound to wait for social change to have completed any cycle before mapping can begin or begin again. Figure 3a reflects the potential for global mapping. In this figure the total of social space is represented, and the diversity of ideologies and convictions is demonstrated by the numerous fonts. Maps are being created at various locations in this space through the process shown in Figure 3. However,

Figure 3a A cognitive map of the social milieu illustrating the absence of a power base and the free access to knowledge in a holistic map. The map represents building an understanding of the social milieu rather than maintaining a preferred social system. The expanded legend for this map is presented in the text of this essay.

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it is obvious from the variety of fonts that the Knowledge/Information following the Map changes in some way the ideology and convictions of a component of the Social Milieu. Changes in fonts, or course, indicate change over time, either smooth change or ruptured change.

Figure 3 confirms there is a continuing of space as well as time as Star suggests,[43] but neither is dependent on the other. We offer that time certainly is continuous and experienced in that while it is biologically limited (from conception to death) it is socially flowing or rupturing through the human species. Space, however, is conditional, subject to be in a time (but not to be time) as well as in a social context. Social space is just as subject to change as the space of the land is made conditional by erosions and eruptions. A calm sea or a dormant volcano slows geological time, leaving little trace of time's passing. A violent sea or an erupting volcano quickens the geological pace creating change for the cartographer to map. So it is with the measure of society. The more violent or overflowing the society the more changes readers and mappers may perceive. However, social mappers need not await the abatement of the societal seas or the cooling of the societal land to begin their project. They may map immediately as the erosions and eruptions affect the social milieu. The potential for comparative immediacies and simultaneities inspires continual mapping and remapping.

In Figure 3a we seek to model the creation process that Rust, Harley, and Soja are advocating for their respective comparative fields. It is a model we encourage both disciplines to share; it is a model offering "markedly different proposals...seeking to improve the rigor and relevance of research in education [or cartography] by encouraging tolerance, reflection, and the utility of multiple approaches in knowledge production and use."[44] We believe that in the sharing of the mapping project comparative education has much more to gain.

Conclusion

Rust has further opened comparative education to its postmodern potential, observing "Ours is a world, no longer of reality, but of simulation, where it is no longer possible to separate the real from the image."[45] Now cognitive maps offer comparative education a tool for expanding conceptual presentations and interpretations. In the hands of the comparative educator cognitive maps should be a part of research directed, as Sack suggests, "at reconstructing... chains of influence so that we will know what parts of the society are interrelated."[46] Figure 3a provides a model for study and interpretation of that chain of influence, linking the components of to social to social mappers and the social map. Creating knowledge of the interrelations and locations of the milieu that is comprised of diverse societies and cultures and locating them in relation to one another is the

objective of cognitive mapping and it is the essence of a critical cartography. We propose, first, that the structures of multiple education and knowledge systems can be recreated in one or more maps, images of space reflecting the effect of passing time on that space; and, second, that comparative education researchers attempt more often to represent that space and time through the creation of cognitive maps.

Our rationale for this proposal is that the map provides the mapper access to understanding, but gives all persons the opportunity to enter a dialogue to show where they are in society. The cognitive map reveals the known and perceived social inclusions while leaving space for further inclusions of social ideas. Whether the map is considered by the reader as a metaphorical curiosity or accepted as a literal representation, we believe it should offer comparative researchers an opportunity optimistically to situate the world of ideas in a postmodern panorama, one that is subversive to attempts promoting orthodoxy.

We regard the advantages of presenting some comparative findings in the ancillary text of cognitive maps a significant opportunity for comparative education and the critical studies that survey not only education but the social and cultural environment.

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3.Rolland Paulston, "A Cognitive Mapping of Vision and Division in Comparative Education Texts," Paper presented at the 24th Annual Conference of the International Visual Literacy Association, "Imagery in Science and the Arts," University of Pittsburgh, September 30-October 4, 1992.

4.Harold J. Noah "Fast-Fish and Loose-Fish in Comparative Education," Comparative Education Review 18 (October 1974): 341-47. p. 342.

5.Peter Hackett, "Aesthetics as a Dimension for Comparative Study", Comparative Education Review 32 (November, 1988). p. 389.

6.Hackett, p. 391.

7.For a recent attempt at such "blue water" cartography, see R. Paulston, "Ways of Seeing Education and Social Change in Latin America: A Phenomenographic Perspective" Latin American Research Review 27: (1992) pp. 177-202.

8.Val Rust, "Postmodernism and Its Comparative Education Implications," Comparative Education Review 34, p. 610.

9.Rust, p. 616.

10.Rust, p. 623.

11.S. L. Star, "The Sociology of the Invisible: The Primacy of Work in the Writings of Anselm Strauss," Social Organization and Social Process: Essays in Honor of Anselm Strauss. ed. D. R. Maines. (New York: Aldine de Gruyter, 1991). p. 266.

12.Jean Baudrillard, Revenge of the Crystal. (London: Pluto Press, 1990). p. 92.

13.J. B. Harley, "Deconstructing the Map," Cartographica 26, (1989): 1-20.

14.R. B. McNee, "Perspective--Use It or Lose It," Professional Geographer, 33 (February, 1981): 12-15. p. 12.

15.Harley, p. 13.

16.Harley, p. 13. A panopticon is "a prison or workhouse so arranged that all parts of the interior are visible from a single point." Although "spatial panopticon" serves Harley, we believe a better metaphor for our vision of the cognitive map would be "panoptic space." This phrase requires some clarification if it is to be contextually advantageous to our arguments for cognitive mapping. Panoptic typically means (1) "permitting the viewing of all parts or elements" or (2) "considering all parts or elements; all inclusive." However, these definitions require an omniscient perspective. We therefore believe to limit panoptic to mean "the total of those parts or elements being offered by the mapper for the readers' consideration" best serves our need. Further, the definition of "space" best suited to cognitive mapping is that associated with mathematics: "a system of objects with

relations between the objects defined." A working definition of the "panoptic space" described in the cognitive map could be "the total of those parts or elements of a system of objects defined by the mapper and presented for consideration." (Definitions for "panopticon" and "space": Webster's Encyclopedic Unabridged Dictionary of the English Language, 1989. New York: Gramercy Books.)

20.Baudrillard, p. 63.

21.Baudrillard, p. 35-36.

22.R. Paulston, "From Paradigm Wars to Disputatious Community," Comparative Education Review, (August, 1990): 395-400.

23.Foucault quoted in Harley, p. 4.

24.E. Soja, Postmodern Geographies: The Reassertion of Space in Critical Social Theory. (London: Verso, 1989). p. 71.

25.Soja, p. 122.

26.Rust, 625-626.

27.C. Hampden-Turner, Maps of the Mind. (New York: Collier Books, 1981). p. 8.

28.R. Raivola, "What is Comparison? Methodological and Philosophical Considerations," Comparative Education Review 29 (1985): 362-374.

29.R. M. Downs and D. Stea, "Cognitive Maps and Spatial Behavior: Process and Products" in Image and Environment: Cognitive Mapping and Spatial Behavior, ed. R. M. Downs and D. Stea. (Chicago: Aldine Publishing Company, 1973). p. 9.

30.P. Foss and J. Pefanis in "Translators' Note" to Jean Baudrillard, Revenge of the Crystal. (London: Pluto Press, 1990). p. 11.

31.Ibid, p. 13.

32.Baudrillard, p. 27.

33.Noah, p. 344.

34.R. Nozick, Anarchy, State and Utopia (Oxford: Blackwell, 1974).

35.Paulston, 1992, p. 31.

36.Soja, p. 7.

37.Soja, p. 119.

38.Soja, p. 119.

39.Rust, 625-626.

40.V, Maseman, "Ways of Knowing: Implications for Comparative Education," Comparative Education Review 34, (November. 1990). p. 465.

41.Maseman, p. 469.

42.B. Holmes, "Paradigm Shifts in Comparative Education," Comparative Education Review 28 (November, 1984). p. 591.

43.Star, p. 277.

44.Paulston, 1990, pp. 395-400.

45.Rust, p. 622.

46.Robert David Sack, Conceptions of Space in Social Thought (Minneapolis: University of Minnesota Press, 1980), pp. 16-17.